

A METHOD OF USING FILMS HAVING OPTIMIZED  
OPTICAL PROPERTIES FOR CHEMICAL  
MECHANICAL POLISHING ENDPOINT DETECTION

5

ABSTRACT OF THE DISCLOSURE

A method of using films having optimized optical properties for chemical mechanical polishing (CMP) endpoint detection. Specifically, one embodiment of the present invention includes a method for improving chemical mechanical polishing endpoint detection. The method comprises the step of depositing a dielectric layer over a reflectance stop layer. The reflectance stop layer is disposed above a component that is disposed on a semiconductor wafer. During a determination of the thickness of the dielectric layer using a reflected signal of light, the reflectance stop layer substantially reduces any light from reflecting off of the component. Therefore, the present invention provides a method and system that provides more accurate endpoint detection during a CMP process of semiconductor wafers. As a result of the present invention, an operator of a CMP machine knows precisely when to stop a CMP process of a semiconductor wafer. Furthermore, the present invention enables the operator of the CMP machine to know within a certain accuracy the film (e.g., dielectric layer) thickness remaining after the CMP process of the semiconductor wafer. Moreover, the present invention essentially eliminates excessive chemical mechanical polishing of the semiconductor wafer. As such, not as much dielectric material needs to be deposited on the wafer in order to compensate for excessive chemical mechanical polishing of the semiconductor wafer. Therefore, the present invention is able to reduce fabrication costs of semiconductor wafers.